DOCUMENT RESUME

ED 289 452 HE 021 066

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TITLE Reconceptualizing Inquiry in Medical Education.
PUB DATE Jan 88
NOTE 6p.
AVAILABLE FROM Southern Illinois University, School of Medicine, Department of Medical Education, P.O. Box 3926, Springfield, IL 62708.
PUB TYPE Journal Articles (080) -- Viewpoints (120)
JOURNAL CIT Professions Education Researcher Notes; v9 n3 p5-7 Jan 10 1988

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Clinical Experience; Educational Research; *Field Studies; Higher Education; *Medical Education; *Naturalistic Observation; *Qualitative Research; Quasiexperimental Design; Research Design; *Research Methodology; *Scientific Methodology

ABSTRACT

Perspectives concerning a field-based inquiry approach to medical education are offered. This approach requires that inquiry tactics more closely match educational and clinical processes. Assumptions about naturalistic and quasi-experimental educational research are considered that indicate a common field-based approach to inquiry. Parallel processes linking conceptions of medical education, clinical practice, and inquiry are also considered. It is concluded that understanding of social and educational phenomena has too long been determined by research and evaluation frameworks that define concepts of what is good and what is bad in medical education and that have limited those concepts. The processes of medical education and clinical practice are seen as complex, nonlinear social processes appropriate for applying a field-based inquiry approach. Most medical education research has been organized by constructs, typically psychological or behavioral, that are used to explain or predict certain patterns of human behavior. Rethinking of medical education inquiry is advocated, along with less reliance on the experimental design framework of scientific inquiry. (SW)

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PROFESSIONS EDUCATION RESEARCHER NOTES: Volume 9, No. 3, January 1988

A publication of Division 1: Education in the PRofessions
of the American Educational Research Association

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Reconceptualizing Inquiry in Medical Education

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Recent literature reviews and position papers (Garrison, 1986; Howe, 1985; Trochim, 1986) have suggested that there is less difference of opinion on the bases for educational inquiry than indicated in the qualitative-quantitative discussion papers of the recent past (Phillips, 1983; Smith, 1983, 1984). Ironically, it is the traditional, quantitative framework of educational inquiry that has experienced a redefinition of scope and purpose.

The traditional educational research framework has come to define itself more in terms of field-based inquiry. This redefinition has resulted in a reconsideration of the nature of the objects of study, whether they be students, classes, or whole educational programs, and furthermore, has altered the aims of educational inquiry. In this paper I will discuss two main points:

1) Recent reconceptions of quantitative inquiry as field-based inquiry have blurred the differences between naturalistic inquiry and traditional, quantitative inquiry—particularly quasi-experimental approaches to research.
2) Field-based inquiry demands a new appreciation for and of the object(s) of interest in inquiry.

In the medical education context, a field-based inquiry approach requires that inquiry tactics more closely match educational and clinical processes. Medical education researchers might begin to think of educational inquiry as not so different from how they think of the processes involved in medical teaching or clinical practice.

In the following paragraphs, I will discuss how some authors have introduced assumptions about naturalistic and quasi-experimental educational research that indicate a common, field-based approach to inquiry. Then I will discuss what I see as parallel processes linking conceptions of medical education, clinical practice, and inquiry. In the latter case, I hope to show how a field-based inquiry approach matches the processes underlying the objects of inquiry (specifically medical education instruction and clinical practice).

My conclusion is that understanding of social and educational phenomena has too long been determined by research and evaluation *frameworks* that define concepts of what is good and what is bad in medical education and have come to limit those concepts. The reverse should be true. Education in medical or any other settings is a complex activity. Our knowing of medical education should not ignore the complexity, and our inquiry methods should illuminate educational processes, not obscure them.

Distinctions between naturalistic and quasi-experimental research

Describing the differences in assumptions between naturalistic and quasi-experimental educational research is on the surface a simple task, but has grown more complex in recent years. Quasi-experimental educational research has its roots in Campbell and Stanley (1966). Two basic features of Campbell and Stanley's monograph were explication of "the theory of the validity of causal inferencss and a taxonomy of the research designs that enable us to examine causal hypotheses (Trochim, 1986)." At that time and in many pro and con discussions of quasi-experimental research since (Phillips, 1983; Smith, 1983; Smith, 1986; and Garrison, 1986), the assumptions underlying the quasi-experimental research approaches were linked with philosophy of science concepts such as positivism or logical positivism. Simply stated, the positivist framework assumed an ability to generate objective knowledge, knowledge that corresponded with the true nature of reality. The ends of research based on such assumptions were explanation or prediction of causes underlying social events. Theories to be tested and replications of studies accumulated over time and tended to confirm or refute certain research conclusions.

In contrast to the traditional research approach, naturalistic research was linked to phenomenology, relativism, and more recently to an interpretive philosophy of science perspective. Interpretivism is the term I prefer. It captures the role of judgment in social research. It focuses on the act of interpretation as both a social and an inquiry process. Interpretivism assumes that a certain notion of meaning has an essential place in the characterization of human behavior. Taylor (1971) defined this meaning as experiential meaning—it is for a person, about something and lies in a field of meanings. He stated that the object of interpretive social science was making sense of social meaning. Whereas explanation and prediction were the desired results of the quasi-experimental research approach, naturalistic research was designed to provide a vicarious experience of some case or cases in order to increase understandings of educational events and contexts. Reality was conceived as mind dependent and traditional conceptions of generalizability were replaced by naturalistic generalizations (Stake, 1978) or the notion of transferability (Lincoln and Guba, 1985).

The main difference between the two approaches in medical education research is the treatment of setting and experience. The quasi-experimental approaches typically treat setting as a simple matter of description, usually meaning description of student (behavior) and program (treatment) characteristics. Experience is treated as a variable to be controlled. On the other hand naturalistic research approaches tend to treat setting as an essential element for understanding the effects of context on a program or event. Setting is treated as a complex, nonlinear phenomenon. Likewise, experiences of individuals, programs, and the researchers themselves are viewed as part of a nonstatic, evolutionary process that cannot be controlled and that affects the progress of the research.

The "Field" as a basis for educational inquiry

There are some dilemmas that complicate the distinctions above. Within naturalistic research approaches there is diversity along a positivist-interpretivist continuum. Some, like Miles and Huberman (1984), advocate a "soft" positivism, while others, like Eisner (1979), suggest a largely interpretive approach. Some recommend theory-driven naturalistic research, while others see naturalistic research as situational and atheoretical. However, fundamental to the naturalistic approach is the assumption that researchers should study events as they naturally occur. In naturalistic inquiry, the researcher does not impose an *a priori* research design on a situation, but observes educational events as they naturally unfold. Related to this characteristic is another critical one—specification of what the investigator does. In naturalistic inquiry, the investigator is a featured, prominent instrument in the inquiry process. The naturalist views research "subjects" as co-investigators and directly appeals to the natural authority of the research participants. Therefore, the naturalistic research approach is by definition a field-based research approach.

Parallel to the above, researchers using quasi-experimental approaches have been moving away from allegiance to Campbell and Stanley's "taxonomic design mentality" and have

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begun to discuss some of the complications raised by those advocates of the qualitative turn in social inquiry (see Garrison, 1986; Trochim, 1986). Trochim suggested a chronology of references (Boruch, 1975; Cook and Campbell, 1979; and Cronbach, 1982) that indicated a needed design flexibility when doing quasi-experimental research. While these proponents of quasi-experimental social research might not agree with the whole range of assumptions underlying naturalistic research, they have begun to question what assumptions must be met when applying their methods in the field.

Two examples are worth noting. In each case, the authors' redefine inquiry in terms of the field, a specific context for studying interactions concerning educational events. Cook and Campbell (1979) went into great detail to defend their transformation of the notion of causality. While they are still committed to causal analysis, they adopted a theory of causation defined as an "evolutionary critical-realist perspective."

> "[The perspective is] an evolutionary perspective, when couched in a critical-realist mode, [because it] enables us to recognize causal perceptions as 'subjective' or 'constructed by the mind'; but at the same time it stressses that many causal perceptions constitute assertions about the nature of the world which go beyond the immediate experience of perceivers and so have objective contents which can be right or wrong (albeit not always testable) . . . we are reconciled to the fact that *in the social sciences the causal explanations we will be dealing with will be molar and contingently causal* rather than ultimately micromediational and inevitable." (pp.29,33, my emphases)

Trochim (1986) also introduced an interesting discussion of the role of judgment in quasi-experimental research.

> "One theme that underlies most of the others and that illustrates our increasing awareness of the tentativeness and fraility of quasi-experimentation concerns the importance of human judgment in research. Evidence bearing on a causal relationship can emerge from many sources, and it is not a trivial matter to integrate or resolve conflicts or discrepancies. In recognition of this problem of evidence, *we are beginning to address causal inference as a psychological issue that can be illuminated by cognitive models of the judgmental process.* We are also recognizing more clearly the sociological bases of scientific thought and the fact that science is at root a human enterprise. Thus, a positivist, mechanistic view is all but gone from quasi-experimental thinking, and what remains is a more judgmental and more scientifically sensible perspective." (pp. 1 and 2, my emphases)

I find the above revisions of quasi-experimentation encouraging signs for the future of educational research in medical education settings. What is encouraging is that quasi-experimental researchers and naturalistic researchers are focusing on the field as the fundamental framework for inquiry, as opposed to focusing on experimental design and methods.

Once inquiry is defined as an ongoing, field-based activity affected by human judgment, then, as a process, it is not unlike the processes to which it might be applied, namely, medical education and clinical practice. Below, I review the processes of medical education and clinical practice as complex, nonlinear social processes that a field-based inquiry approach might mirror.

The process of medical education

Medical education is the process by which a learner develops the elementary skills, foundational knowledge, and professional behavior of a physician (Wilson and Smythe, 1983). Most medical education research has been organized by constructs, typically psychological or behavioral, that are used to explain or predict certain patterns of human behavior. For example, clinical education has been defined by constructs called "cognitive" factors and "interpersonal" factors. The underlying research assumption was that once one understands these forces one is better prepared to intervene programmatically to insure certain desired outcomes.

Typically, medical education research focuses on analysis of student performance outcome measures of "skills," "Knowledge," and "attitudes" as if these end products were the only criteria by which one might define medical education outcomes. This view was reinforced by Foley (and others, 1983), who suggested that "research must be concerned with assessing the behavioral outcomes that result from an educational intervention."

The above is the "black box" view of medical education and educational research. The danger of such a conception of medical education research is its reliance on a singular perception of the nature of education. This becomes a problem when medical education is defined as a complex entity.

Education (as a field, broadly defined) is an applied discipline. It exists as a process engaged in by many players and in multiple contexts. Feinberg (1983) suggested that education is a fluid, complex enterprise about which people disagree, and research on education must embrace, not reduce, this complexity.

One example of the differences of perspectives co-existing in education is found in Zais' (1976) discussion of multiple conceptions of curriculum. Zais suggested that some conceptions of curriculum "are grounded firmly in the Latin root notion that curriculum is a *racecourse* of subject matters to be mastered." Examples were: curriculum as the program of studies; curriculum as course content; and curriculum as planned learning experiences. However, these conceptions of curriculum were met with criticism by some others for assuming certain conceptions of instruction. These critics suggested that curriculum constituted a guide for instruction, but could not prescribe a means (an act of instruction). Others argued that curriculum was "hidden," meaning it was what took place in spite of certain planned activities. Zais' conclusion was, "Any definition of curriuclum will necessarily vary according to the purposes which are to be accomplished. Like the physicist's concept of light, the definition of curriculum that is most useful in achieving the purposes of the situation at hand is the one that is most "correct" for that situation." However, the issue is more difficult than Zais suggests. The multiple conceptions of curriculum cannot be isolated or ignored; they exist simultaneously. Educational research, in this example, must develop a capacity to negotiate among competing, co-existing conceptions of curricula, teaching events, etc., as these occur in experience, e.g., in the field.

Dinham and Stritter (1986) pointed out that medical education, while serving a discipline based on scientific conceptions, is itself an applied discipline, one with a commitment to practice. Medical education research, however, has relied on the scientific paradigm. Nonetheless, as introduced in the preceding sections of this paper, educational research based on the experimental design framework of scientific inquiry is an outdated concept.

I suggest that medical education rely more heavily on its allegiance to education than medicine as a foundation for its inquiry. In fact, I think it is an inevitable conclusion, if one accepts the assumptions that social reality is defined by multiple perspectives and that determining cause is a nonlinear, evolutionary, and debatable undertaking. Dinham and Stritter seemed to conclude that the current research focus of much medical education research—for example, its lack of theory, its local site orientation, etc.—were problems to be surmounted by a new commitment to "prescriptive theory-building research." I disagree. I suggest that with education's practical orientation, studies undertaken with a field-based, more practical research focus might yield more educationally valid results.

In summary, one-half of a "substantive" basis for reevaluat-

ing the basis of inquiry in medical education is grounded in matching conceptions of education and inquiry as processes that are changing and evolving. Education is a variable concept, and it is conceived of in different ways according to the situation at hand and the biases of those conceptualizing it. The basic issue is that a flexible, reflective inquiry process is well-suited to an applied discipline where theory and assumptions (about what is education) are contending.

The process of clinical practice

Certain conceptions of clinical practice also parallel assumptions about the importance of matching "field" and inquiry approach. Berg and Smith (1985) introduced complimentary definitions of clinical research and practice.

> "The word *clinical* is an adjective formed from the word *clinic*, a setting where knowledge about a field of endeavor is pursued, accumulated, and applied to problems arising in that field (Morgan, 1984). The Greek word *clinicos* means bed or couch (from the verb *clino*—to cause to lean). In modern usage, an important element of the historical root of the word clinical has been maintained—namely, the delivery of therapeutic service to someone who is 'bent over' or in bed... But the research aspect of the clinical setting—the role of the clinic in producing professional knowledge that can be used for therapeutic purposes—has not only faded from view, but given way to a popular view that the clinical and research aspects of a profession are distinct and often conflicting endeavors." (p. 24).

The danger of separating research and practice is another dimension that a field-based inquiry approach tries to resolve. A field-based approach grounds itself in real life experience. One way to resolve the separation of research and practice in clinical settings is to make the clinic not only the setting for practice, but also a setting that generates and sustains research. My suggestion to match clinical practice and research parallels the interest stated in the previous section, i.e., to match educational practice and educational inquiry.

Another similar perspective on clinical practice was offered by Baron (1985). He argued that the scientific perspective of medicine was deceptive. He suggested that in practice medicine was based on a phenomenological perspective.

> "If we want to practice a medicine that helps us bridge the distance between doctors and patients, we need to have a paradigm that incorporates a fuller understanding of the human predicament. Medical phenomenology can help us subject what we learn about disease as research physicians to the ordering principle of what we already know about illness as human beings. Phenomenologically informed medicine offers a discipline that serves patients, rather than one that they serve. It requires, as a central task of medical practice, that we reconcile scientific understanding with human understanding, using the one to guide the other." (p. 610)

Baron's suggestions conform to the idea that another conception of the field, the clinic, should be closely linked to research. Specifically, clinical research should focus on natural, practical, "human" understanding as much as scientific understanding.

The above perspectives on clinical practice suggest alternative views of medicine, ones not necessarily committed to the scientific model as the principal paradigm of interest. These views on clinical practice emphasize a discovery orientation, a perspective on solving patients' problems that depends on a dynamic framework for investigation of a health problem. Any related inquiry process should reflect this dynamic framework.

Schein (1987) described in detail how a clinical perspective is employed in fieldwork. He described a process model of research where the field-oriented researcher is defined as assuming an insider, consultant-collaborator, clinic role—one which demands a long-term, open-ended, give-and-take commitment to bring about organizational and educational change.

The distinct benefit of Schein's monograph for medical edu-

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TABLE ONE. Comparison of Characteristics of Medical Education Instruction, Clinical Practice, and Field-Based Inquiry (Adated in part from Berg and Smith, 1985)

MEDICAL EDUCATION INSTRUCTION	CLINICAL PRACTICE	FIELD-BASED INQUIRY
Direct involvement with and/or observation of students	Direct involvement with and/or observation of human beings	Direct involvement with and/or observation of human beings or social systems
Willingness to admit errors and/or 'I don't know' during instruction	Commitment to a process of self-scrutiny by the physician in generating a differential diagnosis	Commitment to a process of self-scrutiny by the researcher in conducting the research
Use of an instructional style that is adaptable (to instructional opportunities and limits of the educational setting) and that changes to fit the various learning styles of students	Willingness to alter treatment in response to the data collection and analysis during treatment	Willingness to change theory or method in response to the research experience during the research itself
Willingness to spend time finding out about students' backgrounds and educational histories in order to generate expectations and an instructional program that matches student's needs	Description of history and physical examination that is thorough and favors depth over breadth in each patient encounter	Description of social systems that that is dense or thick and favors depth over breadth in any single undertaking
Actively engages students in the educational process in order to foster self-directed learning and to meet agreed upon needs	Actively engages patient in self-diagnosis under the assumption that much of the information of interest is only reportable by patients	Participation of the social system being studies, under the assumption that much of the information of is only accessible to or reportable by its members

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cation research is his definition of a clinical research role that corresponds well with the roles assumed by many medical educators. Medical education researchers are most often employed in-house, with primary research responsibilities which focus on improving educational efforts in their immediate medical education settings.

Parallel processes in medical education instruction, clinical practice, and field-based inquiry

Table One introduces conceptually the main point of this paper, i.e., that inquiry processes must operate in a fashion parallel with the nature of social and human practice and systems. This is the basis for recommending that proper inquiry is reflective, interpretive inquiry—in this discussion, inquiry must reflect the complex nature of medical education instruction and clinical practice. In the Table I have tried to highlight certain processes of medical education instruction, clinical practice and field-based inquiry in such a way as to show the parallel steps inherent in each of the processes. The description of medical education instruction is based on research that combines concepts germane to adult learning theory and medical education (see Stritter, Hain, Grimes, 1975; Stritter and Flair, 1980; Gjerde and Coble, 1982; and Schwenk and Whitman, 1984). The descriptions of the clinical and field-based inquiry processes are adapted from Berg and Smith (1985).

Comparing field-based inquiry with medical education instruction and clinical practice was done to highlight processes similar in each approach. The key point is that there is a legitimate match among certain features of medical education, clinical practice, and inquiry that justify use of a less "scientific," more field-based research approach in medical education settings.

The purpose of this paper was to state a case for blurred distinctions between quasi-experimental and naturalistic research in medical settings. All forms of educational and social inquiry seem to be focusing on the field as a framework and basis for inquiry. In this paper, I have tried to show how, in medical education settings, focusing on the fields of medical education and clinical practice may require some rethinking of the ways we conceive of medical education inquiry.

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Deadlines for the next issue of PERN

Manuscripts	February 1, 1988
Announcements	February 15, 1988